Rymer, Edwina

From: Dorsey, Nancy
Sent: Wednesday, June 18, 2014 9:39 AM
To: R6 6WQ-SG;Lawrence, Rob;Dwyer, Stacey
Subject: FW: From EnergyWire -- EARTHQUAKES: Texas residents say data link injection wells and quakes

From: bates.william@epa.gov by E&E Publishing [mailto:email_this@eenews.net]
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ENERGYWIRE

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EARTHQUAKES: Texas residents say data link injection wells and quakes *(Wednesday, June 18, 2014)*

Mike Lee, E&E reporter

A string of small earthquakes around Azle, Texas, tapered off shortly after an energy company lowered the amount of wastewater from natural gas operations it was injecting into a disposal well.

An environmental group and the mayor of a nearby town said numbers released late yesterday by the Texas Railroad Commission showed a link between oil and gas operations and the earthquakes.

XTO Energy Inc., an Exxon Mobil Corp. subsidiary that operates the well, said it has been operating normally. The well opened in 2009, and the pressure and volume have stayed within the limits of its state-issued permits, Suann Lundsberg, an XTO spokeswoman, wrote in an email.

"Additional research is needed to develop a physical model to evaluate why these seismic events are occurring," Lundsberg wrote. She said researchers need to look at other causes, including drought, the level of a nearby reservoir and natural stress and strain.

Data from the Railroad Commission show that XTO increased both the volume and pressure at its West Lake disposal well, which is about 2 miles north of Azle, starting in the summer of 2013. The volume injected at the well rarely exceeded 10,000 barrels a day, and the pressure rarely exceeded 700 pounds per square inch during the first half of 2013. The volume and pressure exceeded those

levels almost daily from the end of July to December, then dropped back to the pre-July levels the first five months of 2014.

The Azle area had more than 30 earthquakes that measured magnitude 2.0 or greater -- large enough to be felt but not strong enough to cause major damage -- beginning Nov. 1 and continuing until February. The frequency began to drop in December, and the area has had only four earthquakes above magnitude 2.0 in all of 2014.

Azle, about 20 miles northwest of Fort Worth, sits atop the Barnett Shale gas field. XTO, based in Fort Worth, was among the pioneers in using horizontal drilling and hydraulic fracturing to coax gas out of shale field.

The XTO site is the closest injection well to the area that researchers have identified as the epicenter of the quakes, according to published reports. Other injection wells in the area are farther away and don't show the same drop in volume and pressure, according to the data from the Railroad Commission, which regulates oil and gas operations in Texas. The Railroad Commission didn't offer any conclusions about the data and a spokeswoman didn't respond to an email seeking comments.

The decline in the number of quakes is similar to the pattern that happened in Cleburne, Texas, from 2009 to 2011, said Sharon Wilson, an organizer for EarthWorks. Researchers at the University of Texas linked small earthquakes in Cleburne to injection wells, and the shaking stopped once the injection wells were shut down or curtailed (*EnergyWire*, Jan. 27).

Lynda Stokes, the mayor of Reno, Texas, also saw a pattern.

"That does fit the timespan," she said in an interview. It also fits with the increases and decreases in truck traffic going to XTO's injection site that residents have seen, she said.

Researchers verified a link between underground injection and earthquakes in the 1960s. The quakes in Texas, Oklahoma and other energy-producing states are thought to be linked to the deep injection wells used to get rid of chemically tainted wastewater from oil and gas production. Hydraulic fracturing, the water-intensive technique used to open up shale formations, isn't thought to contribute directly to earthquakes, but it produces huge volumes of wastewater.

Scientists from the U.S. Geological Survey and Southern Methodist University have been studying the Azle earthquakes and have said it could take more than a year to publish their findings (*EnergyWire*, Feb. 11).

Other states have adopted "traffic light" policies that limit injection volumes or pressure when earthquakes are detected near a disposal well. Ohio began requiring real-time seismic monitoring and other tests at injection wells in 2011 (*EnergyWire*, May 21).

The Railroad Commission has been slower to act. The three commissioners, who are elected statewide, have questioned whether there's a link between injection wells and earthquakes. Still, the commission hired a seismologist, Craig Pearson, in March (*EnergyWire*, March 31).

One of his first actions was to request the injection data from the operators around Azle.

"Posting of the information to the Commission's website is part of our continued effort to ensure the public is informed of our efforts to scientifically investigate seismic events in Texas," Pearson said in a news release.

Reporter Mike Soraghan contributed.

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EnergyWire is written and produced by the staff of E&E Publishing, LLC. EnergyWire is designed to bring readers deep, broad and insightful coverage of the transformation of the energy sector. EnergyWire focuses on the business, environmental and political issues surrounding the rapidly expanding unconventional energy industry and the numerous factors -- from expanding natural gas use to renewables and more -- that are altering the traditional electric utility industry. EnergyWire publishes daily at 9:00 a.m.

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